electromotive force, but when the circuit is in advance of the electromotive force an increase of frequency decreases the reactance.

The author points out that the terms virtual and effective are employed indiscriminately by some writers, but has been unsuccessful in his attempt to make the terms clear. The effective value of the E. M. F. is taken to be its component of direction of the current; the effective current is the component of current in the direction of the E. M. F., all of which is quite beyond criticism, unless it be one of words. 'Virtual value' is adopted to designate the square root of the mean square value and is properly explained to be the equivalent of a direct electromotive force or current which would produce the same effect either on an electrostatic voltmeter, or in heating. Thus, we may have occasion to refer to the virtual value or to the maximum value of any quantity, as of the impressed E. M. F., of the effective E. M. F., of the total current, or of the effective current. Although thus clearly giving a proper meaning to the term virtual, the author usually employs 'virtual E. M. F.' as synonymous with 'impressed E. M. F.,' and 'virtual current' as being the total or actual current which flows as distinguished from a particular component of it. Thus (p. 83), "In most circuits the impressed or virtual E. M. F. meets with an opposing E. M. F. of reactance, and the effective E. M. F. is something less than the virtual E. M. F. * * *" Also (p. 84), "That proportion of the current which can do useful work may be called the *effective current*. When there is no phase difference, the effective current is the same as the virtual current; but as the angle of lag or lead increases, so does the value of the effective as compared with the virtual current diminish." Again (p. 87), the author refers to 'impressed or virtual electromotive force.'

These two much abused words are likewise unnecessarily dragged in; thus (p. 64) we note 'virtual or effective resistance;' (pp. 89 and 93), effective watts,' the imputation being that we, might likewise have ineffective watts! Also (p. 94) we are told that the virtual watts put into a circuit may be far in excess of the actual power conveyed!

Throughout the book the author has used terms with meanings other than those he has assigned to them by definition.

These blemishes are serious ones. With thorough revision, the book will satisfactorily meet the admirable end the author had in view.

FREDERICK BEDELL.

Anleitung zur Mikrochemischen Analyse der wichtigsten organischen Verbindungen. Von H. BEHRENS, Professor an der Polytechnischen Schule zu Delft. Viertes Heft. Karbamide und Karbonsaeuren. Mit 94 Figuren im Text. Hamburg und Leipzig, Verlag von Leopold Voss. 1897. Pp 129. Mark 4.50.

In the first number of Professor Behrens' book the anthracene group, phenols, quinones, ketones and aldehydes were considered. The second number, treating of fibrous materials, was reviewed in this JOURNAL for January 15, 1897. The third number deals with aromatic amines, and with the present number continues the work satisfactorily. It should be remembered that Professor Behrens' work is the only textbook extant in this important field.

E. R.

Die Chemie im täglichen Leben. Von DR. LASSAR-COHN. Universitäts Professor zu Königsberg. Zweite Auflage. Hamburg und Leipzig, Verlag von Leopold Voss. 1897.

The first German edition of Professor Lassar-Cohn's book was fully reviewed in this JOURNAL for January 22, 1897, by Professor Orndorff. The appearance of a second German edition, and the success of Professor Pattison-Muir's English translation show the value of the book.

E. R.

SOCIETIES AND ACADEMIES.

THE NEBRASKA ACADEMY OF SCIENCES.

THE eighth annual meeting of the Academy was held at Lincoln on November 26th and 27th. On the first day the Presidential address was given by Dr. A. S. von Mansfelde, of Ashland, his subject being 'Some Practical Applications of Science.' It was devoted largely to a discussion of the alcohol question from the scientific and medical point of view in opposition to many untenable positions taken by advocates of total abstinence.

The paper by Dr. H. B. Ward on 'Factors in Civilized Life which modify the Abundance of Parasitic Animals' in man and domestic animals dealt with the advantage of modern methods of stall-feeding, watering from wells, cleanly modes of killing and packing. Dr. E. H. Barbour reported progress on the study of Dictomaceous Earths in Nebraska. Lymnæa, Physa and Planorbis occur as fossils. The beds are furnishing excellent material for packing engine boilers as a non-conductor of heat. 'The Flora of a Dried-up Mill Pond,' by C. J. Elmore, included a list of species and a classification of them according to habit and mode of distribution. Most of the species did not occur on the adjacent bank.

Dr. C. E. Bessey presented evidence of poisoning by *Rhus radicans* without direct contact and concludes that Dr. Pfaff's non-volatile toxicodendrol may not be the only poisonous principle present or that it must be sufficiently volatile to escape in hot moist air. Dr. Roscoe Pound presented observations on the 'Abundance of Certain Secondary Species in Prairie Formations,' and showed how it may be determined quantitatively by definite count, and how misleading any other estimate is apt to be. Professor F. W. Card presented 'Notes on Root Growth,' showing that whether roots were cut back much in planting or not the new roots in any case arose mainly from the base of the roots rather than from the callus at their tips, so that best results were obtained by leaving the roots without cutting back.

Mr. H. M. Benedict discussed the generic characters of the genus *Ichthyotænia* and described a new species. Professor G. D. Swezey reported upon experiments with color screens in astronomical photography, by which an ordinary visually corrected objective gave good results in photographing bright objects.

The evening was devoted to a lecture by Mr. N. H. Darton, of the U. S. Geological Survey, on 'Some Points in the Geology of Nebraska,' with lantern illustrations, and to a banquet for members and their wives.

The first paper on November 27th, by Dr. E. W. Davis, was a discussion of certain mathematical relations between the surfaces, edges and vertices of regular solids. Miss Carrie Barbour reported upon the history and results of the Morrill Geological Expeditions. Dr. E. H. Barbour reported upon 'A Second Nebraska Meteorite,' weighing six pounds; also upon 'Our Beds of Volcanic Ash,' which are found widely distributed in the State and which furnish a very pure polishing powder. They are found distinctly stratified and fossiliferous, showing aqueous deposition.

A paper by Dr. E. W. Davis on 'Karl Pearson's Researches on the Mathematical Theory of Evolution' showed how the theory of probabilities may be used in the discussion of biological and similar data. Mr. W. D. Hunter reported upon 'Additions to Professor Bruner's List of Nebraska Birds' and upon progress in compiling lists of insects of various orders for the State. Dr. Roscoe Pound reported upon the 'Progress of the Botanical Survey of Nebraska,' particularly upon the beginnings of a study of the phytogeographic as distinguished from the mere floral aspects of the subject. Dr. R. H. Wolcott presented a paper 'On the Genus *Atax*,' giving an account of generic characters, habits and a number of new species.

For lack of time the following papers were read by title only:

The Fern Allies of Franklin county, Neb.: E. M. Hussong.

The Peat Beds and Underlying Diatomaceous Deposits along Cedar Creek and Tributaries: J. P. Rowe.

On the Experimental Proof of Faraday's Theory of Electricity: Louis T. More.

Announcement of New Nebraska Fossils: Dr. E. H. Barbour.

Observations on the Concretions of the Pierre Shale: Carrie A. Barbour.

On the Taxonomy of the Nemathelminthes: Dr. H. B. Ward.

Oolitic Sands from the Dakota Cretaceous of Nebraska: Dr. E. H. Barbour.

Some Points in the Geology of Lincoln and its Environs: C. E. Fisher.

The following officers for the ensuing year were elected:

President, Dr. H. B. Ward, Lincoln; Vice-President, Dr. A. S. von Mansfelde, Ashland; Secretary-Treasurer, Professor G. D. Swezey, Lincoln; Custodian, Professor Lawrence Bruner, Lincoln.

The meeting was the most successful one in the history of the Academy, both in attendance and in the interest manifested. Its annual volume of Proceedings is now in press, and will be larger and more fully illustrated than usual.

G. D. Swezey,
Secretary.

BIOLOGICAL SOCIETY OF WASHINGTON—282ND MEETING, SATURDAY, NOVEMBER 20.

Mr. David White exhibited two specimens of Carboniferous shale from Lerkis-Bey, near Amasra, Asia Minor, on which are associated *Neuropteris Scheuchzeri* Hoffm., and *N. fimbriata* L., together with fragments of another *Neuropteris*, possibly *N. ovata* Hoffm., and two species of *Pecopteris*, one of which was *P. abbreviata* Brogn. Especial attention was called to the interesting circumstances that not only do these species appear to be identical in details with specimens similarly identified in the collection of the U. S. National Museum from the Lower Productive Coal Measures of Ohio and Pennsylvania, but that in this continent the species are also found in immediate association.

Dr. Erwin F. Smith exhibited a simple style of hypodermic syringe recently brought out by Baurch and Lamb.

Dr. Sternberg stated that it was identical in principle with one devised by himself when at Johns Hopkins University.

Professor O. F. Cook described 'A New Wingless Fly from Liberia,' stating that it was perhaps referable to the family Phoridæ, but that it represented a new genus to which the name *Wandolleckia* was given in honor of Dr. B. Wandolleck, Dipterist of the Berlin Museum. Wings, balancers and ocelli are lacking; the eyes are reduced to about forty hemispherical facets and the abdomen is membranous, the chitinous plates being rudimentary. The type *Wandolleckia achatinæ* inhabits the deep forests of Liberia, where it is found actively running about on *Achatina variegata* Roissy, the largest West African land snail. The genus may be related to *Puliciophora* Dahl, a wingless form from the Bismarck Archipelago, but is generically distinct in the much greater reduction of the abdominal plates and in the armature of the tarsi. The resemblance of both forms to fleas is probably merely superficial and has no phylogenetic implication.

Mr. V. K. Chestnut presented a paper entitled 'Some Recent Cases of Mushroom Poisoning.' The symptoms of ten cases collected by the Botany Division of the U. S. Department of Agriculture during the past year were given. Two of these were fatal to four individuals. The minor cases were caused by *Clitocybe illudens*, *Russula emetica*, *Boletus subtomentosus*, *Agaricus morganii*, a species of *Clavaria*, and the puff ball, *Lycoperdon giganteum* Batsch. One case of poisoning by the last-named species was especially noted because, although the fungus was unquestionably fresh and was properly cooked, the symptoms were very marked. The two fatal cases reported were caused by the fly amanita (*Amanita muscaria* (*L.*) *Fr.*) and the death cup (*Amanita phalloides* (L.)Fr.). It was conclusively shown by photographs, drawings and specimens that the former caused the death of Count de Vecchj in Washington on November 10, 1897, it having been mistaken for the orange amanita (*Amanita cæsarea*). The case was, however, complicated with apoplexy. Another gentleman who ate some of the same fungus was saved by repeated doses of $\frac{1}{100}$–$\frac{1}{50}$ of a grain of atropine, this being an almost perfect physiological antidote to the effects of muscarine. The seeds of Jimson weed (*Datura strammonium*) could also be used to advantage in such cases. Freshly ignited charcoal is valuable for its physical properties in absorbing the poison, and an alkaline solution of the permanganate of potash is in some cases useful as a chemical antidote. There is no antidote against the effects of phallin, the toxalbumin which causes death in *Amanita phalloides* poisoning, but in severe cases the transfusion of salt water or fresh blood is recommended. The action of the poison from the two amanitas is altogether different. Muscarine paralyzes the heart and produces marked stupor, while phallin dissolves the red blood corpuscles, causes a gradual collapse and generally leaves the brain unaffected.

Dr. Erwin F. Smith spoke on Bacterial Diseases of Plants, taking for his text certain misstatements in Dr. Alfred Fischer's recent *Vorlesungen über Bakterien*. At least ten diseases of plants are now known to be due to

bacteria. These are about equally divided between Europe and America, and there is no excuse for ignorance concerning them.

F. A. LUCAS, *Secretary.*

ZOOLOGICAL CLUB, UNIVERSITY OF CHICAGO.
OCTOBER, 1897.

Two Cases of Mimicry.—The results of some observations on the mimetic habits of the Syrphid flies of the genus *Spilomyia* were presented. *S. fusca*, Leow, which is dull black-banded and spotted with yellowish white, was frequently seen flying about in the shrubbery and feeding on the honey of some golden-rods that had sprung up in a clearing in the pine woods (Price Co., Wis.). This Syrphid resembles in size, form, coloration and movements *Vespa maculata* and a smaller allied species of wasp, and was observed to occur in the same places and at the same time as these Hymenopterous models. A large female of *S. fusca* was masticated and found to have an agreeable flavor, the alimentary tract of the insect being full of honey in this instance. Therefore, warning colors are associated with the absence of disagreeable smell and taste, as the generally accepted theory of mimicry requires. In the same locality *Spilomyia quadrifasciata*, Say, was less common than *S. fusca*. It strikingly resembles the species of *Odynerus* (*O flavipes* and *O. foraminatus*), which also frequent the flowers of the golden-rods. Both insects are black, spotted and banded with bright yellow, the black predominating. The genus *Spilomyia* includes also a third group of mimics, which, like *S. liturata*, Williston, closely resemble the 'yellow-jacket' wasps (*V. germanica*, etc.). In these flies the deep yellow bands are broader and more numerous and the black coloring more restricted than in *S. fusca* and *S. quadrifasciata.*

W. M. WHEELER.

Secondary Mesoblast in the Mollusca.—Secondary mesoblast was first found in the mollusks in the lamellibranch Unio by Dr. F. R. Lillie. This secondary mesoblast was found to arise asymmetrically from a cell of the second generation of ectomeres on the left side of the egg. It subsequently becomes disposed symmetrically on both sides of the egg, apparently by a migration of some of the cells, and is mainly employed in the formation of the larval adductor muscle.

Later, secondary mesoblast was discovered in the gasteropod crepidula by Dr. Conklin. It was found to arise from the second generation of ectomeres, as in Unio, but from three quadrants instead of one, and at a much later stage of development than in the form studied by Lillie.

The secondary mesoblast in Physa, according to Wierzejski, and in Planorbis, according to my own observations, has a still different origin, since it arises from cells of the third generation of ectomeres on the anterior side of the egg. Its origin is symmetrical, as it arises from the two anterior quadrants of the third quartette, which lie on either side of the median plane. The divisions of the cells in the third quartette in Planorbis agree very closely with those of Physa until a late period of cleavage. In both forms the first division of the cells of the third quartette is radial; at the next division both the upper and lower cells in the two anterior quadrants divide horizontally into equal parts. The next cleavage in the anterior quadrants is the unequal division of the lower pair of cells, each cell giving off a small cell toward the vegetal pole. In both Physa and Planorbis the upper pair of cells resulting from this last cleavage contain the secondary mesoblast. In Planorbis these cells, after dividing almost horizontally, sink into the segmentation cavity and finally lose connection with the wall of the blastula. Whether these cells are entirely converted into secondary mesoblast in Physa, as in Planorbis, appears uncertain from Wierzejski's account. S. J. HOLMES.

Dr. Whitman gave an account of his observations concerning the results of crossing the brown and the white varieties of ring-dove, and Dr. Watase read a paper entitled 'Protoplasmic Contractility and Phosphorescence.'

During the month the following reviews of recent papers were also given: 'The Embryology of Crepidula' (Conklin), A. L. Treadwell; 'Recent Literature on Spermatogenesis' (Meves and Hermann), W. H. Packard; 'Structure of Nermertean Nerve-cells' (Montgomery), G. W. Hunter.